

CLAIMS

I claim:

1. An isolated nucleic acid molecule encoding a polypeptide, wherein the encoded polypeptide comprises amino acid residues 21 to 674 of SEQ ID NO:2.

2. The isolated nucleic acid molecule of claim 1 wherein the polypeptide comprises SEQ ID NO:2.

3. The isolated nucleic acid molecule of claim 1 wherein the polypeptide is SEQ ID NO:2.

4. The isolated nucleic acid molecule of claim 1 wherein the isolated nucleic acid molecule comprises nucleotides 257 to 2218 of SEQ ID NO:1.

5. The isolated nucleic acid molecule of claim 1 wherein the isolated nucleic acid molecule comprises nucleotides 197 to 2218 of SEQ ID NO:1.

6. The isolated nucleic acid molecule of claim 1 wherein the isolated nucleic acid molecule consists of nucleotides 257 to 2218 of SEQ ID NO:1.

7. An expression vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment encoding a polypeptide wherein the encoded polypeptide comprises amino acid residues 21 to 674 of SEQ ID NO:2;

a transcription terminator.

8. The expression vector of claim 7 wherein the DNA segment further encodes a secretory signal sequence operably linked to the polypeptide.

9. The expression vector of claim 8 wherein the secretory signal sequence comprises amino acid residues 1 to 20 of SEQ ID NO:2.

10. A recombinant host cell comprising the expression vector of claim 7.

11. A method of producing a polypeptide comprising:
culturing a recombinant host cell into which has been introduced the
expression vector of claim 7, wherein the cell expresses the polypeptide encoded by the DNA
segment.

12. The method of claim 11 further comprising isolating the polypeptide
from the cultured recombinant host cells.

13. An isolated polynucleotide encoding a fusion protein wherein the
encoded fusion protein comprises a first portion and a second portion joined by a peptide
bond, wherein the first portion comprises amino acid residues 21 to 674 of SEQ ID NO:2, and
wherein the second portion comprises another polypeptide.

14. The isolated polynucleotide of claim 13 wherein the polynucleotide
further encodes a secretory signal sequence consisting of amino acid residues 1 to 20 of SEQ
ID NO:2; and wherein the secretory signal sequence is operably linked to first portion and
second portion.

15. An isolated nucleic acid molecule encoding a polypeptide, wherein the
encoded polypeptide comprises amino acid residues 21 to 698 of SEQ ID NO:5.

16. The isolated nucleic acid molecule of claim 15 wherein the polypeptide
comprises SEQ ID NO:5.

17. The isolated nucleic acid molecule of claim 15 wherein the polypeptide
is SEQ ID NO:5.

18. The isolated nucleic acid molecule of claim 15 wherein the isolated
nucleic acid molecule comprises nucleotides 257 to 2290 of SEQ ID NO:4.

19. The isolated nucleic acid molecule of claim 15 wherein the isolated
nucleic acid molecule comprises nucleotides 197 to 2290 of SEQ ID NO:4.

20. The isolated nucleic acid molecule of claim 15 wherein the isolated
nucleic acid molecule consists of nucleotides 257 to 2290 of SEQ ID NO:4.

21. An expression vector comprising the following operably linked elements:

a transcription promoter;
a DNA segment encoding a polypeptide wherein the encoded polypeptide comprises amino acid residues 21 to 698 of SEQ ID NO:5;
a transcription terminator.

22. The expression vector of claim 21 wherein the DNA segment further encodes a secretory signal sequence operably linked to the polypeptide.

23. The expression vector of claim 22 wherein the secretory signal sequence comprises amino acid residues 1 to 20 of SEQ ID NO:5.

24. A recombinant host cell comprising the expression vector of claim 21.

25. A method of producing a polypeptide comprising:
culturing a recombinant host cell into which has been introduced the expression vector of claim 21, wherein the cell expresses the polypeptide encoded by the DNA segment.

26. The method of claim 25 further comprising isolating the polypeptide from the cultured recombinant host cells.

27. An isolated polynucleotide encoding a fusion protein wherein the encoded fusion protein comprises a first portion and a second portion joined by a peptide bond, wherein the first portion comprises amino acid residues 21 to 698 of SEQ ID NO:5, and wherein the second portion comprises another polypeptide.

28. The isolated polynucleotide of claim 27 wherein the polynucleotide further encodes a secretory signal sequence consisting of amino acid residues 1 to 20 of SEQ ID NO:5, and wherein the secretory signal sequence is operably linked to first portion and second portion.